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TECHNOLOGY DEPT.

October 21, 1950

SCIENCE NEWS LETTER

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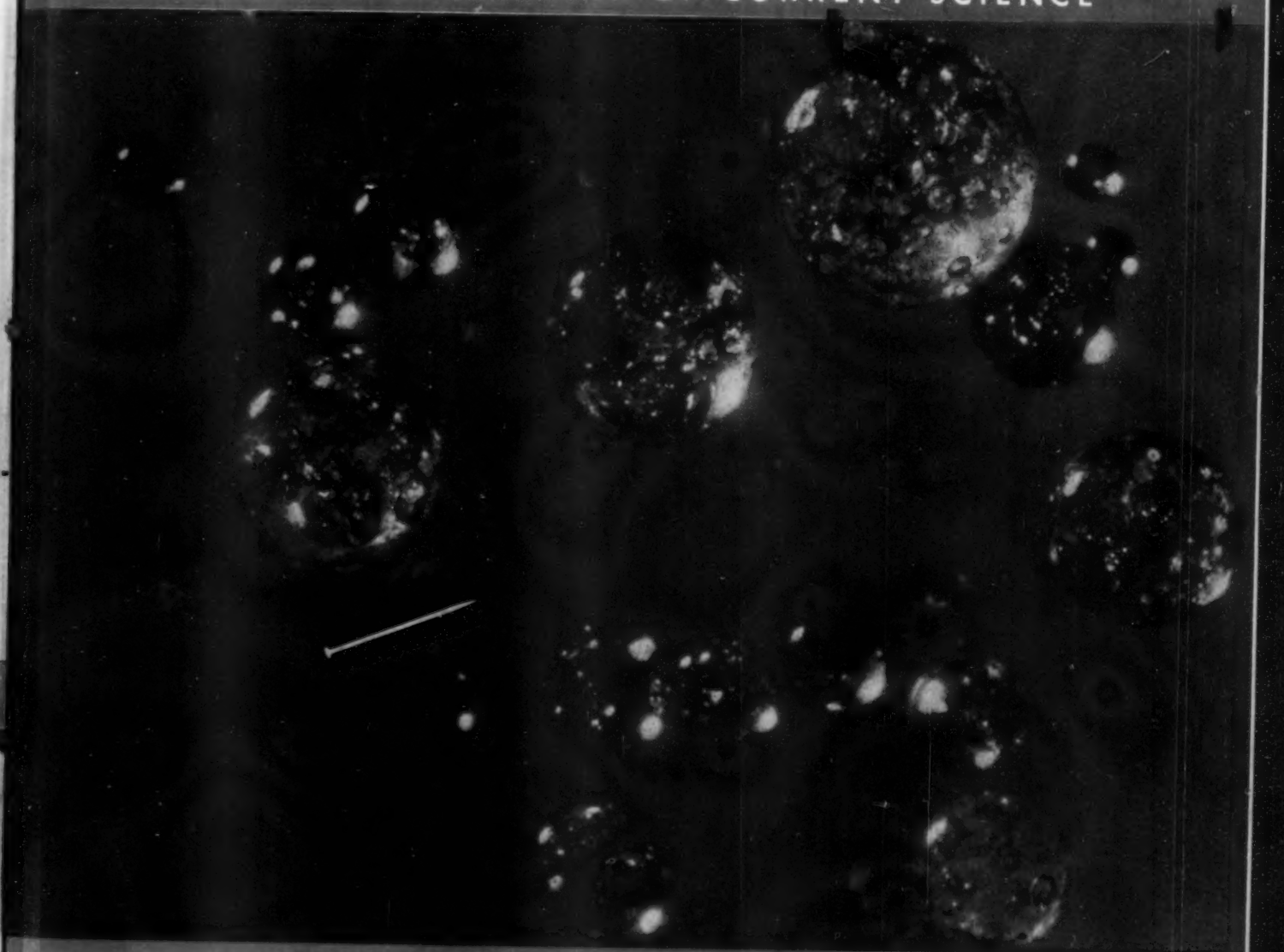

Hot Beads

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A SCIENCE SERVICE PUBLICATION

$5.50 A YEAR

VOL. 58 NO. 17 PAGES 257-272

SOCIOLOGY

Writers Target of Critics

"Culture-personality" writers are accused of over-simplification and circularity of thinking. Emphasis on the part of infant care in character formation is also overdone.

➤ SHARP criticism is leveled at "culture-personality writers" by Drs. Alfred R. Lindesmith and Anselm L. Strauss, sociologists of Indiana University, in a communication to the AMERICAN SOCIOLOGICAL REVIEW (Oct.).

"Culture-personality writers" are those who describe a personality as typical of a certain people and explain this character as a product of cultural influences especially in early childhood.

Included in the target aimed at is Geoffrey Gorer, anthropologist author of a recently published book on the PEOPLE OF GREAT RUSSIA, in which he explains Russian character as traceable in part to the Russian custom of swaddling infants. (See SNL, Sept. 2, p. 147).

Other writers in the group are Dr. Ruth Benedict, author of the much-discussed RACES OF MANKIND, Dr. Margaret Mead, author of a discussion of Americans in KEEP YOUR POWDER DRY, and other well-known anthropologists.

Over-simplification is one charge made against these writers by Drs. Lindesmith and Strauss. The procedure of these writers raises the question that they may have selected evidence that fits in with their theories and neglected inconsistent data, the sociologists say.

Circularity of thinking is another accusation. The writers, it is charged, deduce a kind of personality from behavior in specific situations, and then explain the behavior in terms of the deduced personality.

In discussions of non-Western peoples, the writers are influenced by Western biases, it is indicated. Anthropologists themselves have warned of the danger that "Western biases must inevitably find expression in the inferences made about the psychological characteristics of given peoples.

"This warning has not been taken into account in anything like its full implications by culture-personality writers," the report charges.

Singled out for special criticism is the emphasis on the character-forming efficacy of infant care—bowel and bladder training, nursing, weaning, mothering, restraint of motion, punishment, etc.

There is no body of evidence to support some of the assertions made, the report indicates.

"Most psychologists and social scientists agree," the report admits, "that there is a special significance attached to first or early learning. . . . What we do not know, and are unable to discover from the culture-personality writings, is what precisely it is that is learned in early infancy and what its exact significance may be for later training."

In making their explanations of the development and fixation of personality in early infancy, these writers make little direct study of infants to determine whether the reactions attributed to them actually occur. It is assumed that the reaction of infants to a given type of treatment "must be" of a certain character.

Some writers, the report states, stress not only that culture shapes personality, but also that personality affects culture, and even advance the idea that institutions could be altered indirectly through changes in child-rearing practices.

Science News Letter, October 21, 1950

PHYSICS

"Long-Distance" Seeding

➤ METEOROLOGISTS of the United States Weather Bureau are expected to disagree with Nobel Prize Winner Dr. Irving Langmuir who said that cloud seeding in the Southwest last winter may have caused heavy rains in the Southeast. Dr. Langmuir was the closing speaker at the meeting of the National Academy of Sciences in Schenectady, N. Y.

Pointing out that much seeding with silver iodide has been going on in the Southwest, Dr. Langmuir declared that during the winter in the Southwest there is insufficient moisture and convection activity for the silver iodide to be carried into clouds where ice crystals could form. The prevailing winds, he went on, therefore carry it over the Mississippi Valley where it meets moist air from the Gulf.

When showers occurred last winter in the Southeast as a result of this silver iodide, Dr. Langmuir said, the heat liberated by the condensation of the water in the atmosphere drew in moist Gulf air and northwest winds.

Thus, he said, drought in the Southwest and heavy rains in the Southeast may have resulted from changes in the synoptic weather conditions induced by seeding in the Southwest. During the summer, however, there is enough Gulf air in the Southwest to make seeding effective in giving rain to that region, he stated.

Weather Bureau scientists, who have not agreed with many of Dr. Langmuir's claims, have been pointing to drought in parts of New Mexico where seeding was started in March as an indication that artificial rainmaking is not all that its originators claim it to be.

Although Dr. Langmuir's talk gives an explanation of what might have happened to silver iodide particles released into the air in the Southwest last winter, government weathermen are still less prepared to accept the theory that seeding can cause rain hundreds of miles from the point of seeding.

They claim that nature almost always provides enough particles to make it rain when other conditions are right. Dr. Langmuir and other rainmaking advocates claim that there is sometimes a lack of natural particles and that therefore artificial particles introduced by man will make it rain.

There has as yet been no general agreement on a method to be used in counting natural particles in the air.

Science News Letter, October 21, 1950

MINING

Importance of Salvaging Scrap Metals Emphasized

➤ OVER one-third the lead obtained in the United States during 1949 was from scrap and approximately one-fifth the tin was salvaged from a similar source.

The United States must rely heavily upon scrap to meet defense needs for nonferrous metals, according to Charles W. Merrill of the U. S. Bureau of Mines. Reviewing recent developments in copper, brass, aluminum, lead and zinc, he stated that in view of rising prices and scarcity of major nonferrous metals, scrap must be salvaged.

Due to heavy demands for metals since the end of World War II, most developed and equipped mines in this country are producing to capacity.

If price advances or federal aid make it feasible to exploit low-grade deposits, development will take considerable time. The demands of reconstruction abroad and foreign trade policies of many countries make imports of metals uncertain. Such developments accentuate the importance of scrap, he declared.

"As industrial and military power are so largely dependent on an abundance of metals, the importance to national security of our vast metal accumulation is obvious," he stated. "The scrap metal industry through reclamation helps us to make full use of this pool of metal without undue wastage."

Science News Letter, October 21, 1950

MEDICINE

White Cells as Medicine

White blood cells have now been separated for the first time and will be used to fight disease and atomic radiation ills. They, as red cells, will have to be typed.

➤ WHITE blood cells, fighters of infection in the human body, will become available for treating disease or atomic radiation ills as a result of the National Blood Program to which Americans by the thousands are giving their periodic pints.

For the first time scientists are separating the white blood cells as they have the red cells, plasma and other important ingredients that save life upon the battlefield and rescue the sick and prevent disease in everyday life.

When Dr. Edwin J. Cohn, the Harvard chemist, demonstrated a new mobile blood processing laboratory-on-a-truck to the National Academy of Sciences in Schenectady, N. Y., quantities of the white cells separated were rushed by air to experimenters who will have their chance to try them in actual experimental treatment.

The early work on the white cells shows that they have types as intricate as the red cell varieties which have been recognized for half a century. Before white cells are used they will have to be typed to see whether they match with the patient's own white cells. Typing the red cells alone will not be enough because the same type of red ceil may be accompanied by several white cell types, complicating the already complex picture of exchange of blood between persons and use of blood fractions as drugs.

The new blood processing unit is a complete factory-on-wheels for handling human blood so that every one of the three-score and more blood fractions are saved and most of them actually separated and ready for use. Five centrifuges, constant refrigeration, new plastic apparatus and clever science and engineering applications have entered into this compact and mobile laboratory as a part of our atomic defense.

A score more of them will probably be built ready to take the road for blood handling in any emergency, such as would result from atom bomb attack.

In four hours after the blood is taken out of the donor's veins in an accompanying bloodmobile, the whole separation can be accomplished, resulting in red cells, white cells, platelets and nine essential plasma fractions being produced for medical use or stockpiling. Every bit of the human blood except a little salt water left over of no worth can be utilized.

Blood as processed in past years has provided life-saving plasma and measles-preventing globulin and other applied benefits. Dr. Cohn's new processing, using advanced methods developed by broad cooperative research by scores of scientists, promises even more benefits medically in the future.

The white cells can now be kept alive at least for several weeks, suggesting the possibility of use for human patients as soon as investigations show what is advisable. The platelets are a promising new raw material for medical use, but this is a development for the future.

In past processing of blood the white cells have been destroyed by the surfaces of glass and metal used to handle the blood. In the new continuous processing this has been prevented by using plastic containers or by coating the glass used with silicone, one of the newer plastics.

Science News Letter, October 21, 1950

MEDICINE

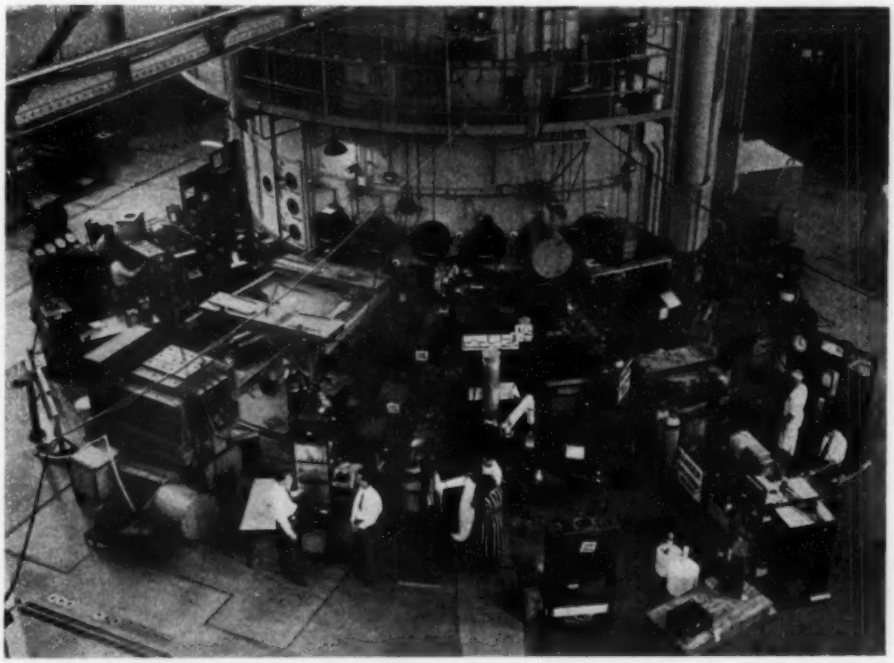
Rabbit Fever via Water

➤ DISCOVERY of the first cases in America of humans getting rabbit fever from a domestic water supply is announced in PUBLIC HEALTH REPORTS, official publication of the U. S. Public Health Service in Washington.

Rabbit fever, known also as tularemia, ordinarily is contracted by handling rodents or rabbits which have the germs in their bodies.

The discovery, which it seemed at first might constitute a major public health problem, was made by Drs. W. L. Jellison, of the Public Health Service's Rocky Mountain Laboratory at Hamilton, Mont., Deane C. Epler, physician at Bozeman, Mont., and Edith Kuhns and Glen M. Kohls of the hygienic laboratory of the Montana State Board of Health at Helena.

Four human patients, present and previous occupants of the same Montana ranch, had definitely contracted tularemia from drinking water during the past year, the scientists report. None of the four had come in close contact with either rodents or rabbits, the most likely carriers of the disease. Dr. Jellison and associates also eliminated contaminated food, but tests of



MOST POWERFUL REACTOR—The most powerful of all nuclear reactors is the heavy-water pile of the Atomic Energy Project at Chalk River, Ontario, under the direction of the National Research Council. The instrument in the center of the picture (where the lady is working) is a neutron spectrometer where the structure of certain chemical compounds is determined. This atomic furnace offers unique facilities for the collection of fundamental data on atomic energy and on behavior of materials under intense bombardment of radiations.

the water supply showed the wide presence of the tularemia bacilli.

Retrospective analysis indicated that two other persons had probably incurred the infection. They had suffered from a protracted and undiagnosed illness.

Public Health Service scientists had been expecting something like this for some time. All cases of tularemia are referred to them by local doctors as requested. They had observed the contamination of natural waters with the tularemia bacillus and these waters are used as rural water supply systems. Just why the tularemia infection from drinking water had not turned up before, as it had in Russia, they were not certain. They suspected, however, that tularemia strains in Montana water, at least, were weak. In another investigation they found that during a 14-month period a majority of the streams in Montana were contaminated.

Commenting on this finding in Montana, Dr. Carl Larson, director of the Rocky Mountain Laboratory of the National Institutes of Health, said that "while stronger strains of tularemia might appear in local water supplies through contamination by heavily infected animals, if that is the mode of contamination, it is still not probable that water-borne tularemia will become a widespread public health problem. Both town and city water supply systems kill the tularemia bacillus through the usual process of chlorination. And in rural areas, if need be, home chlorination or boiling of water would constitute an effective means of control.

"The number of cases is not very great at the present time. Some 1,500 to 3,000 cases, I should say, occur yearly. On the other hand it is not to be dismissed lightly. Its victims suffer badly and for a long period. Tularemia tends to spread rapidly from the point of infection to attack the lymph nodes, spleen, liver, kidney or lung and frequently develops into a typhoid-like state or a typical pneumonia or both."

Science News Letter, October 21, 1950

MEDICINE

Vitamin B Leukemia Aid

➤ ISOLATION and synthesis of a new B vitamin that may help patients with leukemia, though it is not itself a cure or treatment for leukemia, is announced by scientists of the Lederle Laboratories in Pearl River, N. Y., and the Calco Chemical Division, Bound Brook, N. J., of the American Cyanamid Company.

The new vitamin is not given any name in the scientists' report to the JOURNAL OF THE AMERICAN CHEMICAL SOCIETY (Sept.). They merely call it "a substance active for *Leuconostoc citrovorum* and the chick." *Leuconostoc citrovorum* is a bacterium important in the dairy industry. The vitamin is otherwise identified by the Roman numeral I.

The importance of the new vitamin for leukemia patients is that it "competitively reverses the toxicity" of one of the anti-folic acid vitamin chemicals now used in treating leukemia. This anti-folic acid chemical is called 4-aminopteroylglutamic acid.

Patients getting large amounts of the 4-amino chemical sometimes suffer toxic reactions such as painful inflammations and ulcers of the mouth, diarrhea and hemorrhage from stomach and intestines. The new vitamin may overcome these severe toxic reactions and enable doctors to give more of the chemical that helps the leukemia patients. The report in the chemical society journal states only that it reverses toxicity in the mouse, but since the chemical has been synthesized there doubtless will be plenty of it for human patients if clinical tests show it is effective.

Scientists reporting the new vitamin are: John A. Brockman, Jr., Barbara Roth, H. P. Broquist, Martin E. Hultquist, James M. Smith, Jr., Marvin J. Fahrenbach, Donna B. Cosulich, Robert P. Parker, E. L. R. Stokstad and T. H. Jukes.

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SCIENCE NEWS LETTER
VOL. 58 OCTOBER 21, 1950 No. 17

44,200 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 4439.

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MEDICINE

Salt Water against Shock

Salt water for emergency treatment of shock is advised in event of atomic disaster. Drinking fluids would be limited to salt water for several days.

➤ DRINKING quarts of salt water daily as emergency treatment for shock in case of atomic or other disaster is advised by the Surgery Study Section, advisory body to the National Institutes of Health and the Surgeon General of the U. S. Public Health Service.

Dr. Frederick A. Coller, professor of surgery at the University of Michigan, is chairman of the group which is made up of professors of surgery and a few other medical authorities from various parts of the country.

The salt drink treatment should be "adopted for widespread use in any large-scale disaster involving the civilian population," the group recommends.

The salt water would be made of about one level teaspoonful of table salt and one-half teaspoonful of baking soda in each quart of water. Except in extremely hot weather, no other drinking fluid would be permitted during the first few days following the injury that caused the shock.

The solution is said to be quite palatable and burn patients, who are very thirsty, will consume a sufficient amount without urging. In some cases, when there is collapse of blood circulation in the small blood vessels, the solution must be given by injection into the veins.

In case of an atomic bombing, 60% of the surviving population might suffer from burns in addition to other injuries causing shock. Other large scale disasters also are followed by large numbers of shock cases.

Whole blood and blood plasma or albumin are and will remain essential for the treatment of such patients. But in large scale disasters if blood supplies run low and if blood or plasma is not immediately available, the salt water treatment is expected to prove life-saving.

The salt water treatment should be included in Red Cross training programs so that all first aid personnel including firemen, policemen, air raid wardens and housewives will know about it and be prepared to use it, Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, said.

The salt water treatment was worked out in 1943 by Dr. Sanford M. Rosenthal of the National Institutes of Health. Dr. Rosenthal's results, obtained with mice, were considered so promising that Dr. Coller, Dr. C. A. Moyer, dean of the Southwestern Medical School of the University of Texas, and others tried it for human burn patients. Their results form the basis of the Study Section's recommendations.

Science News Letter, October 21, 1950

"SQUIRTING GERTIE"—"Gertie" is doing her bit by helping engineers fight the dangers of aircraft icing with experiments at Ypsilanti, Mich. The plane carries outside an elaborate maze of aerodynamically fitted pipes containing nozzles which can turn ordinary water into rain, snow, fog or mist. It creates only a minimum of drag, slowing down the plane to which it is attached by less than 10 miles per hour.

AERONAUTICS

"Squirting Gertie" Frosts Up Before Defrosting

➤ "SQUIRTING Gertie" is the familiar name of an Air Force airplane, equipped at the Wright-Patterson Air Force Base, Dayton, Ohio, which can coat itself with snow and ice at the will of the pilot while flying at high altitudes.

Attached to the outside of the plane, a C-54, is a maze of pipes with nozzles arranged so that they can shower the plane with a steady stream of water or produce a mist so fine that it becomes a fog. At high altitudes, this artificial fog freezes the instant it strikes the fuselage. A special propeller lying just behind the nozzle also becomes coated with ice.

The purpose of this plane is to study icing and de-icing problems. Two chief means are now used to protect planes for ice. One is mechanical, the other thermal. The mechanical method utilizes an expanding section located on the leading edge of the wing to crack the ice and allow the air stream to peel it off.

The thermal method relies chiefly on heating the airfoil surfaces with hot air to prevent ice from collecting. Tests are now being conducted to determine the feasibility of using combustion heaters which will warm the surfaces of the plane from the inside. One of the main problems in developing this method is to obtain light-weight and space-saving equipment.

Science News Letter, October 21, 1950

CONSERVATION

Low-Grade Fuels for Civilians Due to War

➤ POSSIBLE shortages of gasoline and fuel oils in case of extended war were discussed in Atlantic City, N. J., by leading petroleum producers and users at a meeting of the National Petroleum Association. No shortages may develop but civilians may have to use lower-grade products.

The military need for high octane components for aircraft gasoline will lower the octane level of certain motor gasolines, the group was told by C. M. Larson of the Sinclair Refining Company, New York City. Also, any national emergency requirements for certain components of other petroleum fuels will restrict or change such fuels for commercial and civilian usage.

The all-out war need for large quantities of jet fuel will cut deeply into the kerosene, range oil and other fuel production. The jet fuels require components used by diesel bus engines, in farm tractor

distillate fuel, range and space heater fuels and for many other purposes.

Future emergency requirements of military fuels, such as high-grade aviation gasoline and jet fuels, have an effect on the composition of motor gasoline, the meeting was told by Maj. Ray W. Whitson, Munitions Board Petroleum Committee, Washington, D.C.

During an emergency it becomes necessary to remove alkylate, catalytically cracked gasoline and other high octane number components from civilian motor fuels to produce more high-grade aviation fuel, he said. Also it is necessary to remove straight run from civilian motor fuel, kerosene and diesel fuel to produce more jet fuels. Motor fuel, both military and civilian, will consist of those components not required for aviation fuels.

A brighter note in regard to the total supply was struck by Dr. Gustav Egloff, Universal Oil Products Company, Chicago. The oil industry is producing 3,000,000 barrels a day of motor fuels, and another 500,000 barrels a day could be produced from a million barrels of crude oil production which is now shut in. The oil industry can supply any demand made by the Armed Forces for motor fuels, and the chemical industry can also supply antioxidants, metal suppressors and tetraethyl lead.

Science News Letter, October 21, 1950

GENERAL SCIENCE

Small Schools May Suffer

➤ MANY smaller colleges for men may well collapse if the proposed system of deferring college students for the draft is adopted.

This is only part of the drastic effect the system would be bound to have on the American colleges, college presidents think. They cannot quite fathom how extensive the effect will be, but there are several possibilities.

The deferment policy, a result of advice to Selective Service Director Lewis B. Hershey by six advisory committees made up of educators and scientists, would establish a nation-wide aptitude test for all draftable high school seniors and all draftable men already in college. Those who received a grade on the test higher than a cut-off point to be established would be given deferment, those who failed would not be deferred. The suggested cut-off mark is one equivalent to 120 on the World War II Army General Classification Test.

Once a man is in college, he must do good work to continue his deferment. Only those in the upper 50% of the freshmen class would be deferred to become sophomores, the top 66 2/3% of the sophomores could become juniors and the top 75% of the juniors could complete college and graduate.

This policy has been generally accepted by General Hershey and is now being studied on the policy making levels of the executive branch of the government.

Under present Selective Service law, most high school seniors will be able to go through the college freshman class without worrying about the draft, since they will be 18 years old and they cannot be drafted until 19. It has not yet been decided whether to wait until a man is 19 before giving the test or to give it upon his graduation from high school regardless of his age.

Approximately 300,000 males now enter college every year. It is estimated that 60% of these could pass the aptitude test, and thus receive a student deferment for their freshman year. However, this will have a quite different effect on different colleges. For such places as M. I. T., Harvard, the University of Chicago, it is believed that most, if not all, students who could meet the institution's qualifications would pass the Selective Service aptitude test. But, under the law, half of these could not receive student deferments to become sophomores.

On the other hand, for many smaller colleges, it is estimated that only a little more than 16% of the applicants could pass the aptitude test. The test therefore would cut out most of the male freshmen except the 30% who would be deferred for other reasons. That 16% who remained, however, would be likely to stay in the upper portions of their classes throughout the college life.

For smaller colleges for men, this might well be a serious blow.

But the "selective" institutions, those that select students with high aptitude for college work before admitting them, face a problem of a different kind. Practically all entering freshmen would be, by Selective Service standards, capable of doing good college work. Yet the institution must lose 75% of these to the armed forces before they graduate.

Large state universities will be least affected. Partly because they are dependent on state legislatures for funds and partly because of the American idea that everyone who wants to should have a chance at a college education, state universities take almost everybody who applies. Then they do their weeding out after the freshman year. The net result of this proposed system of weeding out by Selective Service regulation would be quite similar to the normal process.

The nation's educators are particularly worried about the possible "plowing under" of smaller colleges with lower standards. These institutions are usually in sections of the country where education is needed the most.

However, General Hershey's six advisory committees took the attitude that any other system of deferment might well be even more unfair. The aptitude test was the point of greatest discussion in the committee meetings. In a session of the American Council on Education recently, committee members challenged the college presidents to come up with something better which still would keep the needs of the armed forces in mind.

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AERONAUTICS

Gas Turbine in Heater Warms Arctic Planes

➤ SIX-ENGINED giant bombers of the B-36 type can be warmed up ready for take-off in sub-zero weather within 15 minutes with a new portable gas turbine heater developed in Los Angeles, Calif. It is a product of AiResearch Manufacturing Company, and warms up all mechanisms as well as the engines.

It is claimed to be the first portable ground heater using a gas turbine engine. The engine is a lightweight compact affair which is started by electric push button and a single battery. One heater has now been delivered to the Air Force for which it was developed.

During extreme cold weather when mechanical equipment freezes tight, this heater will be used to heat up engines and aircraft cabins, de-ice wings, control surfaces, landing gear and to free hydraulic lines.

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BIOLOGY

Anti-Fungus Chemicals From Earth Mold

➤ TWO anti-fungus chemicals from a mold-like organism of the earth were reported by Elizabeth L. Hazen and Rachel Brown of the New York State Department of Health at the New York Academy of Sciences meeting.

One of the chemicals, named fungicidin, promises on the basis of mouse studies to be useful in treating at least one serious fungus infection which attacks brain and central nervous system as well as the skin and other parts of the body. The causative fungus is called *Cryptococcus neoformans* and the disease it causes is known by several names: cryptococcosis, European blastomycosis, torulosis and Busse-Buschke disease.

Mice infected with this fungus had their lives prolonged by repeated sublethal doses of crude preparations of fungicidin.

Fungicidin in laboratory tests has shown activity against a large number of other fungi, some of them disease-producing, but in much higher concentrations it is not effective against some common bacteria. Its value as a remedy for human patients is now being tested.

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PSYCHIATRY

Prevention by Removal

Spotting and committing obvious maniacs to institutions will prevent violence to public heretofore a necessary occurrence to secure the commitment of a person.

➤ DR. Douglas Kelley, the psychiatrist who studied the Nazis at the Nuremburg trials, looks forward to the day when human "mad dogs" may be spotted and committed to institutions before even their first bite.

Dr. Kelley, now professor of criminology at the University of California, Berkeley, expressed this opinion in Colorado Springs, Colo., at the 57th annual conference of the International Association of Chiefs of Police.

The psychiatrist pointed out that at the present time it is practically impossible to get an obvious maniac committed until he commits an act of violence. However, he said that scientific methods are becoming increasingly accurate for picking out potentially dangerous individuals before they do harm.

For example, he pointed out that a psychiatrist working with the police can compile a scientific case history of a known "crank" or other deviant based on repetitious complaints common to these people, until enough data for commitment are obtained.

Where the individual may be dangerous but not hopeless, preventive psychiatry, involving family consultations and referrals to clinics, can be employed to restore the person.

He said that increasing employment of psychiatry by police can not only protect society but also help in seeing that justice is done.

He cited the use of psychiatry in cases of sex psychopaths as an example. Repetition of offenses may be prevented by the psychiatrist's recommendation of commitment in appropriate cases. On the other hand, the psychiatrist can prevent injustice particularly in sex cases involving children, by correcting mistakes brought on by childish imagination, parental emotion or actual psychopathology.

The psychiatrist said that increasing interest on the part of the public, the judiciary and law enforcement officials eventually will make it possible largely to put away dangerous individuals before they become a menace to the community.

Dr. Kelley said the police psychiatrist may also help in administering the law by teaching police to make simple tests to determine the mental age of complainants, witnesses, and suspects. He said that estimates indicate that as many as 20% of the population is below par intellectually.

"If a witness, complainant or suspect runs below a mental age of eight years, his testimony is perhaps worthless, or at any rate he will require special attention in interrogation," Dr. Kelley said.

Science News Letter, October 21, 1950

GENERAL SCIENCE

Speed-Up in Research

➤ THE DEFENSE Department is launching an all-out speed-up in military research and development so that the western allies' fewer men will be able to outclass the huge communist armies. But it is beginning to have a hard time finding competent scientific personnel to man this effort.

The effort, directly related to our overall manpower shortage should a total war come, is sparked by a $120,000,000 supplemental appropriation for military research granted by the last session of Congress. Defense officials figure that new weapons, better weapons and more of them will more than make up our manpower difference with the Russian-dominated nations.

Before the Korean crisis, an average of $550,000,000 a year was spent on research and development. About 54,000 scientific and technical people were working on military research and development at all levels—35,000 of them for Defense Department contractors.

But the rate at which the nation has produced competent scientific personnel at all levels from Ph.D. down makes the task of spending the extra $120,000,000 hard. Also, some industrial laboratories that have contracts with the Defense Department are reluctant to increase the proportion of research they do for the department.

Of course, industry and university laboratories are having a hard time securing competent scientific personnel too. The National Research Council's Office of Scientific Personnel pointed out recently that, over the three-year period from 1946 through 1948, only 416 Ph.D.'s in physics came out of the schools, 166 in bacteriology, 278 in mathematics, 27 in medicine and surgery and 25 in meteorology. All those are fields directly related to the defense effort.

Thus, research and development officials in the Defense Department are anxious to see colleges turn out as many young scientists as possible. They welcome the new National Science Foundation and its fellowships, they would like to see some broader system of federal scholarships.

Science News Letter, October 21, 1950

ENTOMOLOGY

Going Price for Lady Crickets: 5 Cents Each

➤ DR. Vincent G. Dethier, biology professor at Johns Hopkins University, wants 1,000 crickets. Lady crickets. To cricket trappers of the nation he is offering five cents, cash on delivery, for each of the insects brought back alive.

The female cricket, Dr. Dethier explained, is distinguished chiefly by her long slender egg-laying tube. She has the odd ability to taste with the end of this tube.

Dr. Dethier wants to study how heat and cold affect this taste sense, which is tied to the insect's egg-laying habits. To prospective cricket-trappers, he issued these instructions:

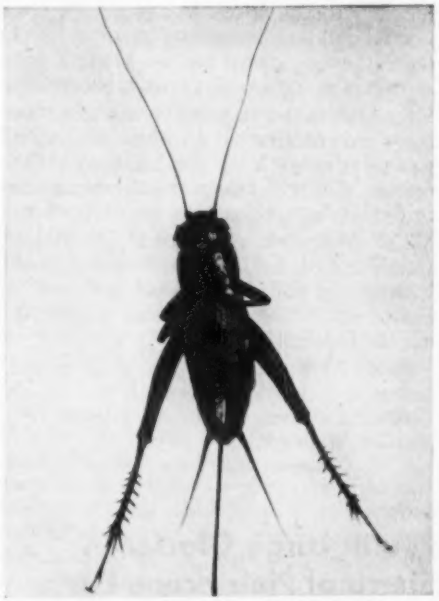
Look for crickets under logs or rocks. Clap them into a milk bottle.

Be sure to feed them, he said. Put in some lettuce or a piece of apple. Otherwise they will eat each other.

"Leave five crickets alone in a bottle on Friday and you may end up with only one very big cricket by Sunday," he warned.

Dr. Dethier will accept only live, genuinely feminine crickets in batches of ten or more. He is confident of getting them. Another Johns Hopkins entomologist each summer puts up a reward for fireflies. Last summer he was swamped with 270,000 of them.

Science News Letter, October 21, 1950



CALLING ALL CRICKETS—Female, that is. The long thin tube at the tail is the chief distinguishing feature of the female. The photograph is enlarged two and one half times.

PHYSICS

Great Store of Energy in Empty Space of Universe

➤ THE EMPTY space of the universe between the stars and the planets contains 50,000 times as much energy per unit volume as the uranium used in the atomic bomb. Yet there seems to be no way to use it, for it is energy as absolutely frozen as the temperature of outer space.

This problem is a prime unsolved mystery of science that Dr. Paul Scherrer, Zurich physicist, posed at the dedication of the new General Electric Research Laboratory in Schenectady, N. Y.

The immense content of energy of empty space is a consequence of the zero point energy of radiation, involved in the quantum theory so fruitful in explaining the atom. The amount of energy in space is equivalent to some 700 million million kilowatt hours per cubic foot.

"If it really exists," Dr. Scherrer told the scientists, "it should by its mass alone produce enormous gravitational effects." All the matter in the universe would be concentrated in a space about equal to the orbit of our moon. Since this is not the case, the present theories are inadequate and as Dr. Scherrer pointed out this is a challenge to further research.

Science News Letter, October 21, 1950

NUCLEAR-PHYSICS

AEC Has No Plans to Heat Towns by Atomic Energy

➤ THE Atomic Energy Commission has no plans for using our atomic piles to heat nearby buildings or entire towns as is reported being planned for the Harwell piles at Britain's atomic energy establishment.

Spokesmen for the AEC said that our plans are concentrated on direct conversion power piles, such as the submarine ship reactor, that will change atomic energy directly into commercial or useful power.

The big pile at Hanford, our largest atomic installation, was built to be cooled with water, not air. It would not now be economical to convert this pile to air cooling, AEC officials state.

Since the Brookhaven pile is air cooled, however, it would be possible to convert some of the energy from the pile for heat purposes if desired.

Science News Letter, October 21, 1950

GEOLOGY

Fourth Large Glacier in Sierra of Pleistocene Era

➤ DISCOVERY of evidence that a large glacier descended both the east and west slopes of the Sierra Nevada mountains approximately 1,000,000 years ago was announced by Dr. William C. Putnam, professor of geology at the University of California at Los Angeles.

Three previous glaciers have been known by geologists to have been active in the Sierra in Pleistocene times. This is the fourth—and largest—that has been found.

This quartet of California glaciers, says Dr. Putnam, is not related to ice advances in the eastern and middlewestern United States.

The U. C. L. A. geologist made his discovery in a tunnel being driven through the mountains in the Owens Gorge, near Bishop, Calif., by the Los Angeles Department of Water and Power engineers.

Nearly 400 feet of volcanic ash covered the glacial deposits, revealing periods of active volcanism between the various ice advances.

This part of the eastern Sierra is one of the most actively-faulted in the world. Hundreds of fault marks are to be found in this region which was a highly volcanic area in the recent geologic past. Deposits left by the final ice advance have been cut by faults, showing that this activity is even more recent than the California ice age.

Science News Letter, October 21, 1950

AERONAUTICS

Pilot's License after Ten Hours Flight Time

➤ YOU can learn to fly a plane and earn your government-approved license after only ten hours of flight training. That is the promise put forth in Urbana, Ill., by three psychologists who are also pilots.

They have already shown that some students, but not all, can pass their CAA flight test after ten hours of instruction. Secret of the short learning period is use of a Link trainer specially modified to simulate conditions usually encountered by small, light planes in flight.

Link trainers were originally designed to teach instrument flight procedures. They are much cheaper to operate than a plane.

To boost the percentage of persons earning their licenses after ten hours of flight time, the psychologists recommend further research into more extensive use of flight training aids, more training of instructors in Link teaching methods and "intellectualizing" of a maneuver by a student before performing it either in flight or in a Link.

Dr. William G. Matheny, Ralph E. Flexman and Edward L. Brown of the Institute of Aviation at the University of Illinois conducted tests on 47 students, half of whom received the regular course.

Final CAA flight tests for license were given by two sets of examiners. Of the Link group, 43% passed while only 19% of the control group passed the CAA examiners. Seven pilots who were already licensed took the test without the knowledge of the examiners. Only three, or 43%, of them passed.

Science News Letter, October 21, 1950

IN SCIENCE

MEDICINE

One-Fourth More Premature Babies Might Be Saved

➤ ONE-FOURTH of the premature babies that now die each year might be saved, at no added cost, if the babies were cared for in special Premature Centers or in hospitals having separate premature nurseries with a separate qualified nursing staff and supervision by pediatricians.

This is the conclusion of a study of mortality and cost experience with premature infants in Illinois in 1948 reported by Dr. Henrietta Herbolsheimer, medical administrative assistant to the director of the Illinois Department of Public Health, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 14).

Even the cost of care in the hospitals with special equipment and staff and the cost of transportation in special ambulances to these hospitals does not exceed the cost of care in other hospitals, she found.

Until premature births can be prevented, Dr. Herbolsheimer suggests that the pattern of care provided in the special hospitals should be aimed for. At least, she points out, the idea that this pattern would save one-fourth the babies now lost should be put to test by accumulation of more data.

Science News Letter, October 21, 1950

MEDICINE-PHYSICS

Chemical May Be Antidote For Uranium Poisoning

➤ A CHEMICAL that shows promise of being an antidote for uranium poisoning, hazard facing atomic energy plant workers unless suitable precautions are taken, has been discovered by scientists in the department of radiation biology at the University of Rochester School of Medicine and Dentistry in Rochester.

The compound is a polyphosphate. When albino rats were put on diets containing a uranium nitrate compound, 10 out of 25 were dead in 21 days and 13 of 25 were dead at the end of 45 days. But when 25 rats on the same uranium-containing diet were given two polyphosphate injections a day for five days, none had died after 21 days and only one at the end of 45 days.

The experiment is a "preliminary" one, the scientists pointed out in a report to the American Physiological Society. But the polyphosphate seemed to have "marked antidotal properties" in the uranium poisoned rats.

Scientists who made the discovery are Drs. Elliot A. Maynard, Harold C. Hodge and William L. Downs.

Science News Letter, October 21, 1950

ENCE FIELDS

MEDICINE

Cortisone for Arthritis By Mouth, Not Muscle

➤ ARTHRITIS patients lucky enough to get cortisone to banish their aching, painful stiff joints may in future be able to take this anti-rheumatism remedy by mouth instead of having it injected into their muscles.

Trials of cortisone pills in four patients showed that this form of the medicine gives results as good as are obtained with injections and as good as with ACTH, Drs. R. H. Freyberg, C. T. Traeger, C. H. Adams, T. Kusou, H. Wainerdi and I. Bonomo of the Hospital for Special Surgery and Cornell University Medical College report in the journal, SCIENCE (Oct. 13).

Science News Letter, October 21, 1950

ZOOLOGY

Mice Like Peanut Butter Better Than Cheese

➤ MUS *musculcus domesticus* likes cheese, but he likes peanut butter and rolled oats better.

Now *Mus musculcus domesticus* is not, strange as it may seem, a domesticated muscular moose—although this is not to say muscular moose don't like peanut butter too. But the fact is, *Mus M. domesticus* is the ordinary northern house mouse.

And with the revelation that peanut butter rates higher than cheese with mice, the U. S. Fish and Wildlife Service yanked the props right out from under an old American tradition.

The debunking of cheese took place at a national rat (and mouse) control conference in Baltimore, Md., sponsored by the Fish and Wildlife Service and the Baltimore, Md., Health Department.

Put a dab of peanut butter on a mouse trap and then cover the entire trap with a handful of oats, said Fish and Wildlife Service scientist Walter W. Dykstra. The mice will choose this smorgasbord fare without hestiation over cheese.

Mr. Dykstra gave other unusual data on the No. 1 American house pest. Mice, he said, live out their lives within 10 to 20 feet from the place where they are born.

They eat 20 to 30 times a day, yet consume only about one-tenth of their own body weight in food in 24 hours. Thus, to poison mice effectively, a chemical must be extremely potent and must be widely distributed about the house, he said.

A mother mouse will bear from 30 to 57 offspring in a year. Her young will mature within three months. The inevitable result is that a mouse family is apt to be a large affair.

Historically, mice are among the world's most ancient pests. They bothered Asiatic tribes 4,000 years ago, Mr. Dykstra said. Aristotle complained of mice, yet the Greeks erected statues to them because they chewed the straps from the enemy's armor.

And of all the inventions offered each year to the U. S. government, the one which comes in greatest numbers is the better mousetrap.

Science News Letter, October 21, 1950

BIOLOGY

New Micro-Guinea Pigs for Research

➤ SCIENTISTS now have a new kind of guinea pig for research in which living creatures are needed. This new guinea pig is microscopic in size and is actually not a guinea pig but a microorganism something like the algae which grow on stagnant ponds. Name for this group or class of organisms is chrysomonads. Studies with them were reported by L. Provasoli and S. H. Hutner of the Haskins Laboratories, New York City, at the National Academy of Sciences meeting.

Another alga, a flagellate, *Euglena gracilis* by name, needs the new anti-anemia vitamin B_{12}. The water of a pond on which this Euglena develops regularly contains B_{12} throughout the year, William J. Robbins, Annette Hervey and Mary E. Stebbins of the New York Botanical Garden found. They believe from their studies that the synthetic activity of microorganisms, especially bacteria and actinomycetes, and not that of higher plants, is the original source of vitamin B_{12} in nature.

Science News Letter, October 21, 1950

MEDICINE

100 Times More Potent Pain-Killer Synthesized

➤ A PAIN-KILLER 100 times more powerful than the procaine your dentist uses as a local anesthetic was announced at the meeting in Schenectady, N. Y., of the National Academy of Sciences.

This and other new local anesthetic drugs were synthesized by R. O. Clinton and F. P. Luduena of the Sterling-Winthrop Research Institute at Rensselaer, N. Y.

They were made by substituting certain chemical groups in the nucleus of the procaine molecule and tested by the sciatic nerve block method in guinea pigs.

With the execption of one, the orthomethoxy compound, the new chemicals appeared to be less toxic than procaine on an activity basis.

They show a "very favorable" ratio between activity and irritation. For example, the ortho-propoxy compound is about 10 times as active as procaine and only twice as irritating.

Science News Letter, October 21, 1950

GENERAL SCIENCE

Unesco Grants Aid Science Information Centers

➤ THE CREAM of the world's scientific developments will soon be more easily available to scientists in the Far East and in South America.

Two grants, out of a total of $1,000,000 announced by UNESCO, the United Nations Educational, Scientific and Cultural Organization, will be used to set up information centers for scientists. One of these will be in India to serve the Far East, and the other is planned for Mexico to serve South America.

Much of the rest of the money authorized will be used to combat illiteracy and to raise the standard of living of people in 12 countries in Asia, North and South America and Africa.

Science News Letter, October 21, 1950

MEDICINE

Malignant Cancer Requires Bunch of Cancer Cells

➤ A CANCER that grows and threatens life appears at a location where "a critical number of cancer cells are bunched together," but a single cancer cell surrounded by normal tissue cannot start malignant growth.

This theory of the origin of cancer was presented by J. C. Fisher and J. H. Hollomon of General Electric Research Laboratory at the meeting in Schenectady, N. Y., of the National Academy of Sciences.

The idea behind this theory is that individual cancer cells in normal tissue are bathed in normal chemistry. A cancer cell surrounded by others of its kind, on the other hand, is bathed in abnormal chemistry where malignant growth is no longer inhibited.

This critical size idea, the scientists stated, "gives new life to the mutation theory of cancer." According to the mutation theory, normal cells change into cancer cells and these continue to reproduce themselves as cancer cells. But this theory, the scientists pointed out, has had difficulty in explaining why there are many more cancers in middle aged and older persons than in young persons.

Mutation rates should remain substantially constant with time, the scientists declared. When the critical size idea is introduced, however, a constant rate of mutation leads to a relationship in which the number of cancers in a population varies with the age of the population raised to the power of the number of cells in a critical size colony.

Experiments with cancer-causing chemicals and observations concerning the location of cancers that have spread from other cancers support the critical size concept, the scientists stated.

Science News Letter, October 21, 1950

MEDICINE

Shock and Broken Bones

Shock which comes with severe injuries may be fatal unless treated. In case of broken bones, "splint them where they lie."

By JANE STAFFORD

Fourth in a series of atomic bomb first aid.

➤ SEVERE bleeding, bad burns, broken bones, crushing injuries, shell, bomb and bullet wounds all call for treatment of shock. Because shock is easier to prevent than to cure, first aiders are taught to begin treatment immediately without waiting for symptoms of shock to develop.

The kind of shock that comes with severe injuries is a state of collapse in which all body functions are depressed due to failure of the circulation. Severe shock is always serious and may be fatal.

Besides the original injury, the following factors may contribute to shock: pain, rough handling, improper transportation, continued bleeding, exposure to excessive heat or cold, and fatigue. The aged, the very young and the discouraged are apt to suffer more from shock. Remember these factors when you are giving first aid to an injured person, so that you do not add to the shock he has already suffered.

Symptoms of Shock

Most common symptoms of shock are paleness, a cool, clammy skin and a feeling of weakness or faintness. Perspiration on the forehead, around the lips and on the palms of the hands is another symptom. A weak, sometimes rapid pulse, nausea and vomiting are symptoms of shock. The patient in shock is often indifferent to what is going on around him and to questioning. Unconsciousness is also a symptom of shock.

These symptoms may not all show in one patient. Usually they develop gradually and the victim may seem perfectly all right at first, only to collapse later. Even a patient in deep shock may not show signs that the first aider can detect.

For these reasons, first aiders are taught that persons with even minor injuries should lie down, and that in every case of serious injury, shock should be treated. The only possible exception to this rule would be in the event of an atomic attack or other large scale disaster in which the first aider's first job after stopping severe bleeding might be to get the injured person out of the hazard area.

Loss of blood is one cause of shock. so when you stop the bleeding you are also helping to overcome the shock, or at least to keep it from getting worse.

First aid directions for treating and preventing shock cover four points:

1. Position. Keep the patient lying down flat. If the injury is severe, raise the lower part of the body a foot or so. If a chest injury makes it hard for the patient to breathe, raise his head and shoulders slightly and keep the legs flat. Never force an injured person to stand or walk except in the unusual situation where you may have to get him away from flames or falling walls. Even then it would be better to have him carried.

2. Heat. The idea is to keep the patient comfortable but not hot. The old idea of applying heat to a patient in shock has been revised because it is now known that coldness of hands and feet in such cases is due in part to constriction of the blood vessels. This is the body's way of making up for the deficiency in circulation.

So you try to conserve the body's heat without adding too much to it. Simplest method is to cover the patient with blankets, coats, newspapers or whatever is at hand. Remember to put the covering under as well as over him, to protect him from the coolness and possibly dampness of the ground. In hot weather, a small amount of covering may be enough. You do not want your shocked patient sweating. In very cold weather you may use hot water bottles to keep his body from losing heat. Be careful not to burn him. He may not feel the heat or be able to tell you it is too hot, but can nevertheless get a burn from too hot a water bottle.

3. Fluids. Don't give an unconscious patient anything to swallow and don't try to pour fluids down his throat. But if the patient is conscious and can swallow, and is not nauseated, small amounts of warm water, broth, milk, tea or coffee may be given. The fluids will help keep him warm and will help replace the fluids he may have lost in blood due to the injury. A cupful every half hour is enough. You may need to feed it from a spoon.

4. Do not give stimulants. They have no value in the first aid treatment of shock. Avoid unnecessary questioning and handling of the patient but care for other injuries.

Prime Rule in Broken Bones

"Splint 'em where they lie" is a cardinal rule for first aid in case of broken bones. In case of large-scale disasters, such as an atomic bomb explosion, it may be necessary to move the patient out of a hazardous area before splints can be applied. The rule should be remembered, however, and applied whenever possible.

One reason for the rule is that any movement of the broken ends of the bone may further damage nerves and muscles and may break large blood vessels, causing

UP AND UNDER—First aid trainees at a Red Cross school practice placing a blanket under an injured person without lifting him from the ground.

SPLINTING BONES — Materials readily at hand, such as this newspaper splint or the pillow, jacket or first aid textbook itself, can be used to improvise a splint for a broken arm.

serious loss of blood. A second reason is to keep a simple fracture from becoming a compound fracture.

Simple and Compound Fractures

Fracture is the medical term for a break in a bone. A simple fracture is one in which the bone is broken but there is no connecting wound from the broken bone through the skin. A compound fracture is one in which the bone is broken and there is a connecting wound from the break to the surface and through the skin. The bone itself may have broken through the skin or the bullet, piece of flying debris or other object that broke the bone may have caused the wound.

A compound fracture is much more serious than a simple one because germs may invade the break in the skin.

Symptoms of a broken bone are swelling, pain or motion about the injured area, tenderness of the area when touched, and deformity. With a compound fracture there is the wound, which may be large or very small and may or may not have bone protruding through it.

Often the victim feels or hears the bone snap. If he can point to the place that hurts, the first aider may be able by moving his fingers gently over the place to feel the break. But don't manipulate it or try to move it to hear the ends grate. And never ask the victim to try to walk if you suspect a broken bone in the leg. It is dangerous and even if he could walk, he might nevertheless have a fracture that does not go all the way through the bone.

Broken Ends and Joints

If you suspect a bone is broken, keep the broken ends quiet and keep the adjacent joints quiet. Control shock. In case of a compound fracture, control bleeding and bandage a sterile dressing on the wound. If a bone is protruding, try to handle the injury in such a way that the bone will not slip back under the skin carrying germs with it and causing further damage.

Of course you will send for a physician in all cases of broken bones, just as you do in any other case for which you must give first aid. If you have to take the patient with a broken bone to the physician or hospital, you must be very careful that the ends of the broken bones are not moved at any time during the journey.

For this purpose, you may use splints if the break is in a bone of arm, leg, thigh or wrist. If you have to improvise splints, use as rigid materials as possible, and have them amply wide and long enough. Boards used as splints should be as wide as the arm or leg.

Splints should be long enough to extend beyond both adjacent joints, above the break and below the broken bone. Pad splints well, to reduce danger of cutting off circulation because of swelling of the part. For the same reason, examine every splinted part at least every 30 minutes and loosen the ties holding the splints if circulation is cut off, or if the part becomes too painful.

Fractures of neck, back and skull should be given great care because of the danger of damage to the brain and spinal cord. Brain concussion, or injury to the brain, may occur with or without a fracture of the skull. Unconsciousness, complete or partial, and for a short or long time is one symptom of concussion. For concussion, with or without fractured skull, keep the patient lying down, raise his head and shoulders slightly unless he is pale, and keep his body moderately warm. Do not give stimulants. Take care of bleeding and wounds.

In case of broken back or neck, keep the patient lying flat, don't let him sit up or raise his head, don't bend his neck, twist his body or flex his body. Try to keep his back, head, neck and body all in one line, or plane.

Transport on Rigid Frame

If he must be transported, this should be done on a rigid frame, taking great care to support head and neck carefully as he is slid onto the frame. Don't double him up or "jack-knife" him into the back seat of a car. Death or paralysis may be the result of such improper handling.

Symptoms of broken ribs are pain in breathing or coughing and tenderness over the fracture area. First aid for these consists in tight bandages put around the chest while the patient constricts it by exhaling. But if he coughs or spits up blood, a lung may be punctured. In that case, do not put on bandages. Keep him quiet and warm with his shoulders raised somewhat until the doctor arrives.

Another frequent symptom of rib fracture is shallow breathing. Deep breathing makes the pain worse. The patient may also try to keep part of his chest over the broken rib from moving with every breath by keeping his hand held tightly over it.

Science News Letter, October 21, 1950

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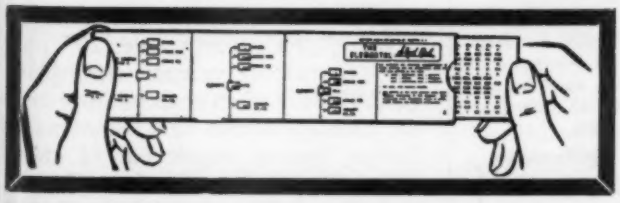

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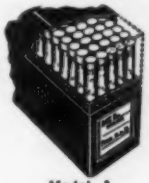

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GEOLOGY

Sulfur from Libya Lakes

➤ UNIQUE possible sources of sulfur for English industries are desert lakes in Libya, North Africa, it was revealed in London by the British Department of Scientific and Industrial Research. The sulfur will come from sulfides which were reduced from sulfates in the lake water by action of bacteria.

Great Britain needs sulfur particularly to make sulfuric acid, an essential in many industrial processes. American industries are using some 35,000 tons a day of this acid, it is estimated. The British Isles import all their sulfur, much of it now coming from the United States.

Recent surveys made by British scientists show that desert lakes in Libya are well supplied with microorganisms known as sulfate-reducing bacteria which reduce sulfates to sulfides. Sulfur can be produced from hydrogen sulfide by simple aeration.

Sulfur is now being recovered from these lakes, K. R. Butlin and J. Postgate of the British Chemical Research Laboratory state. But the recovery is only in relatively small quantities. In the dry season sulfur is scooped up by Arabs from the bottom of the lakes and left to dry.

The quantity available is not sufficient to meet export needs. The rate of production of sulfide is low. To make the process economically feasible, the reduction of sulfates must be stepped up to about ten times the present rate.

More effective bacteria to produce sulfides from the sulfates are now being sought by the British scientists. Strains of bacteria from different parts of the world will be examined for their speed of reduction. The influence of different environments will be investigated. Methods of obtaining possible quick reducing strains by artificial means will be explored.

Science News Letter, October 21, 1950

RADIO

High Hill Near Rio Site Of City's First TV

➤ SUGAR LOAF mountain close to Rio De Janeiro is the site of a commercial television broadcasting station now nearing completion. The 150-foot antenna on the top of 1,300-foot Sugar Loaf will provide an extended reception area.

This TV transmitter is being erected by the International General Electric Company and will be ready for use in the near future. The equipment was constructed by General Electric's electronic department at Syracuse, N. Y. Programs of the Rio station will include studio shows and remote broadcasts from the city's race track and athletic fields.

Erection of the station on the summit of Sugar Loaf presented many difficulties because the site can not be reached by automobile. A cable car to the top for tourists brought some of the equipment. Much was carried to the top by mules.

Science News Letter, October 21, 1950

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ZOOLOGY

NATURE RAMBLINGS

Armadillo

➤ WHEN the Spaniards first climbed up on the plateaus of Mexico they found creatures in coats of mail, no less wearers of armor than Cortez himself. To these the intrigued conquerors gave a lasting name, "Armadillo," a Spanish word which translated as a whole English phrase: "Little fellow in armor."

The armadillos in the United States, a nine-banded family, are the country's only armored animal and the only representative of the edentates, zoological division which also includes the sloth, the ant-eaters and the aard-vark. The last-named, an African ant-eater, has gained fame by being the first full word in Mr. Webster's dictionary.

Since the time of Cortez the armadillo has worked north from Central America, crossing the Rio Grande into Texas about a hundred years ago. They may now be found from New Mexico eastward to Louisiana and as far north as the Oklahoma Panhandle. In somewhat different form, as baskets, their shells may be found in curio shops everywhere.

In ancient times, South American armadillos grew to monstrous size, as long as 16 feet, and perhaps looked at the world with more aggressiveness than their descendants do today.

But now, from large leathery ears to the tip of a tail which resembles a series of telescoping funnels, Mr. Armadillo measures no more than three feet. He is a confirmed pacifist liking nothing better than to be left alone; yet his strong odor and the groaning, grunting and snuffling with which he roots for food are often his undoing.

As protection against his greatest enemies, man, coyotes and mountain lions, nature has given him a thick, bony cuirass and surprising speed. When attacked or alarmed, he may bounce straight up into the air several times, then race away; or he may roll himself up into a ball and wait for the enemy to tire of the siege and go away. This is a last resort. Instead, he will try to dig a quick burrow with strong front claws. But he often gives himself away by leaving his long bony tail above-ground.

The night-prowling animal crosses shallow streams by walking on the bottom. For deeper crossings he huffs and puffs up his insides until they are tight as a balloon and nearly as buoyant. Then he swims, holding his long slender snout above water.

The armadillo's offspring invariably arrives as quadruplets, all of the same sex and developed from a single fertilized egg.

Science News Letter, October 21, 1950

PHYSICS

Beads, Sparkling and Lustrous, Are Radioactive

See Front Cover

➤ TINY glass beads, some sparkling, others dark and lustrous, and all of them valuable, have been made by scientists at the Argonne National Laboratory in Chicago. They are shown on this week's cover of SCIENCE NEWS LETTER in comparison with the point of a common pin.

But you wouldn't want a necklace of them, because these are radioactive beads. They were made for experimental use, to give a small but intensely radioactive source that can be imbedded in living tissues to study the effects of radiation.

Details of their preparation are reported by Drs. Walter Kisieleski, George Svihla and Austin M. Brues in the journal, SCIENCE, (Oct. 6).

Science News Letter, October 21, 1950

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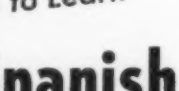

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"Cash In" On YOUR HIDDEN CREATIVE POWER

THOUSANDS of people have hidden creative power—but few know how to bring it out, and how to develop their ideas into *practical* form. Now you can *"cash in"* on your hidden creative powers, thanks to the more than 100 *tested* formulas revealed in a fascinating new book.

The author, Alex Osborn (of the advertising agency, Batten, Barton, Durstine & Osborn) discovered years ago that 90% of our time in school is spent learning facts. Only 10% is spent developing *imagination*. So for years he studied the idea-developing methods used by famous inventors, scientists, business men, and other successful people. Now he has put all his findings in a new book, "Your Creative Power." It is a simple, practical guide to getting and developing ideas.

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- How to collaborate on ideas with others
- The 10 habits that kill ideas
- The 10 habits that breed ideas
- How a single idea made $5,000,000

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Dr. Waldo Semon, Inventor of Koroseal, has recommended the book to fellow scientists.

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Dr. C. W. Fuller, Inventor of Angle Tooth Brush—"This book is simply a knockout. It is so stimulating to the imagination that it should be adopted as a textbook and read by everybody."

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• Books of the Week •

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ARTIFICIAL INSEMINATION IN LIVESTOCK BREEDING—A. H. Frank—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 567, 71 p., illus., paper, 25 cents. States the advantages, difficulties, and limitations of breeding cattle artificially.

THE ATOMIC-MOLECULAR THEORY—Leonard K. Nash—*Harvard University Press*, Case 4, 115 p., illus., paper, $1.35. A study of some of the pivotal stages in the development of the modern atomic and molecular theory.

CHAIM WEIZMANN: Builder of a Nation—Rachel Baker—*Messner*, 180 p., $2.75. A biography of the first president of Israel.

HANDBOOK OF HUMAN ENGINEERING DATA FOR DESIGN ENGINEERS—Handbook Staff, Tufts College—*Navy Special Devices Center* (Distributed by Office of Technical Services, U. S. Dept. of Commerce), tech. report no. SDC 199-1-1, 427 p., illus., paper, $5.00. Three years in preparation, this handbook is a systematic treatise on the science of designing mechanical equipment on the basis of studies of human capabilities.

HUMAN MILK: Wartime Studies of Certain Vitamins and Other Constituents—S. K. Kon and E. H. Mawson—*His Majesty's Stationery Office*, (U. S. Distributor: British Information Services), 188 p., illus., paper, $1.00. The results of a four-year study.

THE HUMAN SPECIES: A Biology of Man—Anthony Barnett—*Norton*, 280 p., illus., $3.75. The author's purpose is to relate the main facts of human biology to the social problems of our time.

MEDICAL MYCOLOGY—Frederick Reiss, Conference Chairman—*New York Academy of Sciences*, 192 p., illus., paper, $2.75. A series of papers concerning fungus research in the light of medical progress. These papers grew out of a conference on Medical Mycology held by the Section of Biology of The New York Academy of Sciences, Oct. 31-Nov. 1, 1947.

MORPHOLOGY AND TAXONOMY OF FUNGI—Ernst Athearn Bessey—*Blackiston*, 791 p., illus., $7.00. A textbook of mycology, the science which studies fungi. An extensive bibliography covering general works in the field of systematic mycology are included.

MUSEUM BUILDINGS, Vol. I—Laurence Vail Coleman—*American Association of Museums*, 298 p., illus., $10.00. $8.00 to American Association of Museums members). A planning study of many museums which are located throughout the United States.

THE NININGER COLLECTION OF METEORITES: A Catalog and A History—H. H. Nininger and Addie D. Nininger—*American Meteorite Museum*, 144 p., illus., $3.00. A record of 27 years in meteorites.

PARADOXES OF THE INFINITE—Bernard Bolzano—*Yale University Press*, 189 p., illus., $3.75. Published under the editorship of Dr. Fr. Prihonsky and translated by Donald A. Steele, this book shows some of the insight that Bolzano enjoyed in the most abstract depths of mathematics, science and metaphysics.

PRINTING TYPES AND HOW TO USE THEM—Stanley C. Hlasta—*Carnegie Press*, (Distributing Agent: Rutgers University Press), 304 p., illus., $7.50. Information on many type faces most commonly used in books, magazines and advertising.

PROCEEDINGS OF THE OHIO HIGHWAY ENGINEERING CONFERENCE 1950—*College of Engineering, The Ohio State University*, 157 p., illus., paper, $1.00. Held in connection with the Ohio Department of Highways, April 3-6, 1950.

PROPERTIES OF FLAMMABLE LIQUIDS, GASES AND SOLIDS—*Factory Mutual Engineering Division*, 12 p., paper, free upon request to publisher, 184 High St., Boston 10, Mass. A reference booklet. One feature of this work is the listing of more than 650 flammable materials found in industrial plants.

PSYCHOANALYSIS AND RELIGION—Erich Fromm—*Yale University Press*, 119 p., $2.50. The author discusses the modern issue between traditional religion and the philosophy of psychoanalysis.

STRUCTURAL CARBOHYDRATE CHEMISTRY—E. G. V. Percival—*Prentice-Hall*, 246 p., illus., $7.35. An advanced college text.

STUDIES IN MENTAL ILLNESS IN THE GOLD COAST—Geoffrey Tooth—*His Majesty's Stationery Office*, (U. S. Distributor: British Information Services), 71 p., illus., paper, 65 cents. A study of juvenile delinquency and the forms of mental illnesses found in the Gold Coast.

TERRAMYCIN—Chester S. Keefer, Conference Chairman—*New York Academy of Sciences*, 240 p., illus., paper, $3.00. Discussions of the new antibiotic. This series of papers is the result of a Conference on Terramycin held by the Section of Biology of the New York Academy of Sciences on June 16-17, 1950.

A TEXTBOOK OF HISTOLOGY: Functional Significance of Cells and Intercellular Substances—E. V. Cowdry—*Lea & Febiger*, 4th ed., 640 p., illus., $8.50.

UNRAVELING JUVENILE DELINQUENCY—Sheldon and Eleanor Glueck—*Commonwealth Fund*, 399 p., illus., $5.00. A reasearch study comparing 500 persistently delinquent boys with five hundred non-delinquent boys in respect to ethnic derivation, age, intelligence quotient and residence in underprivileged areas.

UTILIZATION OF CORNING GRADE CRUDE OIL RESIDUE—Joseph M. Quattlebaum—*College of Engineering, The Ohio State University*, 37 p., illus., paper, 75 cents.

WEEDS: Guardians of the Soil—Joseph A. Cocannouer—*Devin-Adair*, 179 p., illus., $2.75. Discusses the advantages of the controlled use of weeds.

WORLD DISTRIBUTION OF POLIOMYELITIS 1900-1950—*American Geographical Society*, $1.25 map folded to size 5 x 7½ inches; $1.50 flat map 25 x 38 inches. The first of a series of maps showing worldwide distribution of different diseases.

Science News Letter, October 21, 1950

NEW WAY to preserve Science Specimens

Embed in Clear Liquid Plastic—the Method Now used by Leading Universities

Scorpion embedded in Castolite. Human embryo embedded in Castolite. Photos, courtesy School of Medicine, Univ. of Ill.

• The preservation of biological, anatomical, pathological, botanical and other specimens has long been limited to immersion in preservative liquids or to mounting dried samples.

Now, thanks to recent research in the chemical field, a new liquid plastic has been developed which provides the perfect, permanent medium for embedding insects, plants, embryos, mineralogical and other specimens. This new plastic, known as Castolite, has already been tested and approved for specimen preservation by hundreds of the country's most progressive educational institutions, ranging from elementary schools to leading universities, such as Harvard, Yale, M.I.T., Chicago U, Universities of Ill., Wis., Calif. and many others of equal standing.

Army, Navy, Dept. of Agriculture—Use Castolite

In addition, Castolite is now used for experimental work by important government laboratories, including those of Army, Navy, Depts. of Agriculture and Health, and other leading research organizations.

Considering some fifty available polyester resins, Castolite is by a good margin the clearest and the easiest to process. It is, therefore, the most suitable for use not only by a skilled technician but by the non-technical worker as well. The equipment required is simple and readily available in every laboratory, workshop and home kitchen.

The cured plastic is permanent and will not surface craze in laboratory and classroom atmospheres. Its clarity even in thick sections provides full transparency for visual examination and photography.

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"Preserving Specimens in Castolite" is the title of a booklet which is probably the most complete and practical paper ever written on this subject and may be obtained for 50¢. Write for free information today. The Castolite Co., Dept. TC-50, Woodstock, Ill.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 541. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

EAR MUFFS for youngsters have soft fur on the insides and on the two outer sides plastic figures of popular faces framed in fur. The metal connecting frame is adjustable to fit various heads; weather conditions will not harm the washable plastic figures.

Science News Letter, October 21, 1950

TINY HEARING AID is nearly unnoticeable in the user's ear, being only slightly larger than the button on a man's shirt. It has very wide frequency range, and also high and low tone control to provide sound selectivity at either end of the range.

Science News Letter, October 21, 1950

WINTER OVERSHOES are made of nylon except for crepe rubber soles. The outer fabric is a special nylon weave; the lining is a soft, deep pile nylon fabric. These boots are light in weight, well shaped, and offer a shield against both cold and wetness.

Science News Letter, October 21, 1950

LUBRICATOR for small machines and instruments, shown in the picture, has a transparent plastic barrel to hold the oil and a slender oiling tube which operates in holes up to three-fourths of an inch deep. Finger pressure on a button on the top disperses the oil.

Science News Letter, October 21, 1950

PLASTIC RULER for the office desk can be used also as a postal scale. For weighing, it is held between two fingers by a short metal shaft, three inches from one end, on which the ruler swings freely. A sealed envelope stuck in a slot on the short end balances against the weight of the long end.

Science News Letter, October 21, 1950

BOX REFRIGERATOR, suitable for small apartments or to take on a picnic, is aluminum on inside and outside, with fiber glass between to provide the insulating protection. It is a lightweight affair, with two compartments, one for food and the other for ice.

Science News Letter, October 21, 1950

MICROSCOPE LAMP, which uses an ordinary 40-watt electric bulb, is a two-pound device with the bulb inside a cylindrical casing with a condensing lens of the bull's-eye type. With ball-and-socket joint to direct the light, the ventilated casing has a shield to protect the user's eyes.

Science News Letter, October 21, 1950

SAWDUST REMOVER, for attachment to the ordinary handsaw, is a newly patented device which blows the dust from the line on the lumber being followed by the carpenter. It is a tubular device, attached near the handle, that picks up air as the saw is pushed forward, delivering it to the surface below.

Science News Letter, October 21, 1950

Do You Know?

There are more *rats* than people in the United States.

Cashew nuts eaten by Americans come largely from India.

The *sugar* crop of Cuba for 1950 will total over 6,000,000 tons, it is expected; it is Cuba's third largest sugar crop.

A 4,000-foot *viaduct* under construction in Cincinnati will serve as a traffic aid by keeping through east-west automobiles off busy surface streets.

The best place to find *fossils* is in sedimentary rock formed by deposits of sand and silt; in it plant and animal tissues could be buried without being crushed.

Calcium chloride, employed to keep canned whole tomatoes firm until used, reacts with the pectin compounds in the vegetable to form a gel which tends to preserve the tomatoes in their original shape.

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